

**Amendment and Response**

Applicant: Jerome D. Brown et al.

Serial No.: 10/681,851

Filed: October 8, 2003

Docket No.: 10386US01 (J201.179.101)

Title: TAPE REEL ASSEMBLY WITH STIFF WINDING SURFACE FOR A TAPE DRIVE SYSTEM**REMARKS**

The following remarks are made in response to the Office Action mailed December 2, 2005. In the Office Action, claims 1-44 were rejected under 35 U.S.C. § 112, first paragraph as failing to comply with the enablement requirement. Claims 1, 9-10, 14, 26-29, 31, 35, 37, 39, 41 and 44 were rejected under 35 U.S.C. § 102(b) as anticipated by, or in the alternative under 35 U.S.C. § 103(a) as obvious, over Weyrich et al., U.S. Patent No. 3,485,456 ("Weyrich"). Claims 1, 9-10, 14, 26-29, 31, and 35 were rejected under 35 U.S.C. § 103(a) as being unpatentable over admitted prior art in view of Weyrich.

With this Response, claims 1, 26, 35, and 37 have been amended. Claims 1, 9-11, 14, 26-31, 35, and 37-44 remain pending in the application and are presented for consideration and allowance.

**Claim 36**

The Office Action states that claim 36 will also be withdrawn as "[T]here is no disclosure as to what applied stress corresponds to an effective radial modulus of 0.3 million pounds-per-square inch."

The Specification at page 9, line 14 through page 10, line 17 details the relationship between applied stress, a resulting strain, and the associated material modulus that represents the material's deformation (i.e., response) to the applied stress. For any applied stress, a material will respond with some measurable deformation. The ratio, i.e., dividing the applied stress by the measured deformation, defines the modulus of the material or thing being tested. With regard to claim 36, an effective radial modulus of the tape winding surface is in all cases greater than 0.3 million pounds-per-square-inch.

One of ordinary skill in the tape reel assembly art will understand that a relationship exists between the winding of storage tape onto a hub and the resulting deformation of that hub. The Specification at pages 9 and 10 describes that a stress/force is applied radially to a tape winding surface due to successive wraps of storage tape (the number of windings is not necessarily relevant because one of skill in the art will understand that each winding applies some amount of stress/force to the tape winding surface). This applied stress will result in some

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deformation (a strain, see the Specification at page 9, lines 25-29 for a definition) to the tape winding surface. The Specification describes at page 10, lines 15-17 that the effective radial modulus (the applied stress, at any chosen level, divided by the strain) characterizes the relative resistance to radial deformation of the tape winding surface due to the successive wraps of storage tape. In pertinent part, claim 36 requires an effective radial modulus of the tape winding surface of greater than 0.3 million pounds-per-square-inch.

In particular, claim 36 recites in part: "wherein winding of the storage tape onto the hub applies a stress that deflects the tape winding surface, and further wherein **the deflection of the tape winding surface resulting from the applied stress** corresponds to an effective radial modulus of the tape winding surface of greater than 0.3 million pounds-per-square-inch." For all of the above reasons, it is respectfully submitted that claim 36 should not be withdrawn from consideration as it is directed to the elected species, and in addition, claim 36 in view of the Specification discloses the relationship between winding of the storage tape onto the hub that applies a stress that deflects the tape winding surface, and the as-claimed effective radial modulus of the tape winding surface.

**Claim Rejections under 35 U.S.C. § 112**

Claims 1-44 were rejected under 35 U.S.C. § 112, first paragraph, as failing to comply with the enablement requirement.

The Office Action mailed December 2, 2005 takes the position that it is unclear as to how many successive wraps is needed to achieve a situation in which the tape winding surface would have an effective radial modulus of greater than 0.3 million pounds-per-square-inch, or how much or what force is applied to the tape winding surface in order to achieve the radial modulus, or whether the material wrapping the winding surface affects the effective radial modulus.

The test for enablement under 35 U.S.C. §112, first paragraph, is whether one reasonably skilled in the art could make or use the invention from the disclosures in the patent coupled with information known in the art without undue experimentation. *United States v. Teletronics, Inc.*, 857 F.2d 778, 785, 8 USPQ2d 1217-1223 (Fed. Cir. 1988). In this regard, a considerable amount of experimentation is permissible if it is merely routine, or if the specification in question

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provides a reasonable amount of guidance with respect to the direction in which the experimentation should proceed. *In re Wands*, 858 F.2d 731, 737, 8 USPQ2d 1400, 1404 (Fed. Cir. 1988).

Factors for determining whether experimentation is “undue” include “(1) the quantity of experimentation necessary, (2) the amount of direction or guidance presented, (3) the presence or absence of working examples, (4) the nature of the invention, (5) the state of the prior art, (6) the relative skill of those in the art, (7) the predictability or unpredictability of the art, and (8) the breadth of the claims.” *Id.* The last factor, the breadth of the claims “requires that the scope of a claim’s . . . bear a reasonable correlation to the scope of enablement provided by the specification to persons of ordinary skill in the art.” *In re Fisher*, 166 USPQ 18, 24 (CCPA 1970).

With this Response, independent claims 1, 35, and 37 have been amended to clarify the term “effective radial modulus” in response to the Examiner’s questions recorded on page 2 of the Office Action mailed December 2, 2005. In particular, amended independent claims 1, 35 and 37 provide that the effective radial modulus is defined as a ratio of radial stress applied to the tape winding surface divided by a resulting radial deformation at the tape winding surface due to the applied radial stress. In all cases, an effective radial modulus of the tape winding surface is greater than 0.3 million pounds-per-square-inch.

It is respectfully submitted that one of ordinary skill in a tape reel assembly art understands that a relationship exists between an applied radial stress at a tape winding surface and a resulting radial deformation at the tape winding surface, and that a material modulus characterizes this response to the applied stress. Thus, it is respectfully submitted that one reasonably skilled in the art of tape reel assemblies could make and use the invention as disclosed, and would recognize that dividing a stress applied at a tape winding surface by a resulting deformation would define the modulus of the material or thing being tested.

In addition, it is believed that independent claims 26 and 41 comply with the enablement requirement under 35 U.S.C. § 112, first paragraph, and that one reasonably skilled in the art could make or use the invention as claimed by independent claims 26 and 41.

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Based upon the above, it is respectfully requested that the rejections to claims 1-44 under 35 U.S.C. § 112, first paragraph, be withdrawn, and claims 1, 9-11, 14, 26-31, 35, and 37-44 be allowed.

**Claim Rejections under 35 U.S.C. §§ 102 and 103**

Claims 1, 9-10, 14, 26-29, 31, 35, 37, 39, 41 and 44 were rejected under 35 U.S.C. § 102(b) as anticipated by, or in the alternative under 35 U.S.C. § 103(a) as obvious, over Weyrich.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation to modify or combine the reference teachings. Second, there must exist a reasonable expectation of success. Third, the references must teach or suggest all of the claim limitations. MPEP § 2143.

Weyrich teaches at column 2, line 61 through column 3, line 10 a reel 10 including a hub portion 12 having parallel flanges 14 and 16 rigidly mounted to opposite sides of the hub 12. Weyrich teaches at column 3, lines 11-20 that the hub 12 includes an inner rim 20 and an outer rim 22. The outer rim 22 has an outer surface for receiving the computer tape (i.e., outer rim 22 is a tape winding surface). In addition, Weyrich teaches at column 3, at lines 21-27 and 67-70 that the hub 12 includes a lateral metal insert 26 (disposed horizontally between inner rim 20 and outer rim 22; *See* FIG. 3). The metal insert 26 is held in place by screws 46 that project through apertures 38, wells 42, and openings 44 formed in the hub 12. Thus, the hub 12 taught by Weyrich does not provide a solid core.

Weyrich does not teach or suggest a hub including a solid core and defining a tape winding surface having an effective radial modulus of greater than 0.3 million pounds-per-square-inch, where the effective radial modulus is defined as a ratio of radial stress applied to the tape winding surface divided by a resulting radial deformation at the tape winding surface due to the applied radial stress, as required by amended independent claim 1.

Support for the language of the amended claims can be found throughout the Specification (for example, beginning at page 12), and in FIG. 5, which was identified along with the elected species in the Amendment and Response to Election Requirement mailed

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February 25, 2005. In this regard, it is noted that drawings may provide the basis for subsequent amendments to the Specification without producing prohibitory new matter. *In re Wolfensperger*, 302 F.2d 950, 133 USPQ 537 (C.C.P.A. 1962); M.P.E.P. §2163.02.

Weyrich does not teach or suggest a hub including a core and a backbone that combine to define an inner surface opposite a tape winding surface, where at least a portion of the inner surface is metal, as required by amended independent claim 26. Note that the metal insert 26 of Weyrich (*See*, FIG. 3) is disposed horizontally between inner rim 20 and outer rim 22.

Weyrich does not teach or suggest a hub including a solid core and defining an inner surface and a tape winding surface, and including means for configuring the tape winding surface to have an effective radial modulus of greater than 0.3 million pounds-per-square-inch, where the effective radial modulus is defined as a ratio of radial stress applied to the tape winding surface divided by a resulting radial deformation at the tape winding surface due to the applied radial stress, as required by amended independent claim 35.

Weyrich does not teach or suggest a hub defining an inner surface and a tape winding surface, the inner surface comprising a metal backbone, and at least a portion of the hub being made of plastic, where the tape winding surface has an effective radial modulus of greater than 0.3 million pounds-per-square-inch, and the effective radial modulus is defined as a ratio of radial stress applied to the tape winding surface divided by a resulting radial deformation at the tape winding surface due to the applied radial stress, as required by amended independent claim 37.

Weyrich does not teach or suggest a hub including a metal backbone defining an inner surface, and a plastic core coupled to the backbone and defining a tape winding surface, as required by independent claim 41.

It is respectfully submitted that amended independent claims 1, 26, 35, and 37, and independent claim 41 recite patentable subject matter, and that the respective dependent claims 9-10, 14, 27-29, 31, and 44 further define the patentably distinct independent claims. Thus, it is believed that claims 1, 9-10, 14, 26-29, 31, 35, 37, 39, 41 and 44 cannot be anticipated by, nor are they obvious over Weyrich.

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Based upon the above, it is respectfully requested that the rejections to claims 1, 9-10, 14, 26-29, 31, 35, 37, 39, 41 and 44 under 35 U.S.C. § 102(b) and/or 35 U.S.C. § 103(a) over Weyrich be withdrawn, and that claims 1, 9-10, 14, 26-29, 31, 35, 37, 39, 41 and 44 be allowed.

**Claim Rejections under 35 U.S.C. § 103**

Claims 1, 9-10, 14, 26-29, 31, and 35 were rejected under 35 U.S.C. § 103(a) as being unpatentable over admitted prior art in view of Weyrich.

The Office Action mailed December 2, 2005 takes the position at page 4 that it would have been obvious to one of ordinary skill in the art to provide the plastic hub described in the Specification at page 10, lines 20-22 with a metal insert as taught by Weyrich and that the resulting combination renders the identified claims obvious. Applicants respectfully disagree.

To establish a *prima facie* case of obviousness, three basic criteria must be met. First, there must be some suggestion or motivation to modify or combine the reference teachings. Second, there must exist a reasonable expectation of success. Third, the references must teach or suggest all of the claim limitations. MPEP § 2143.

The prior art offered as an example by the Applicants at page 10, lines 2-22, discusses a known plastic hub having an effective radial modulus of 0.19 Msi.

Weyrich teaches at column 3, lines 21-27 that insert 26 reinforces the hub 12 and at the same time cooperates with the hub 12 to provide a hub having a coefficient of expansion and contraction substantially equal to the storage tape stored on the hub reel. It is believed that the screws 46 that project through apertures 38, wells 42, and openings 44 formed in the hub 12 retain the insert 26 between inner rim 20 and outer rim 22 to permit the hub to expand and contract to accommodate movement of the storage tape stored on the hub.

Applicants respectfully submit that no suggestion or motivation to modify the teaching Weyrich exists. In addition, it is believed that Weyrich teaches away from amended claims 1 and 35, and claims that depend therefrom. For example, Weyrich teaches a hub having a coefficient of expansion and contraction substantially equal to the storage tape stored on the hub reel. Thus, the hub in Weyrich must expand and contract to some degree, and this movement is

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inconsistent with a tape winding surface having an effective radial modulus of greater than 0.3 million pounds-per-square-inch, as required by amended independent claims 1 and 35.

Moreover, even if the prior art plastic hub having an effective radial modulus of 0.19 Msi is combined with Weyrich, the resulting assembly fails to teach or suggest a hub including a **solid core** and having a **tape winding surface** having an effective radial modulus of greater than 0.3 million pounds-per-square-inch, as required by amended independent claims 1 and 35, and fails to teach or suggest a hub including a core and a backbone that combine to define an inner surface **opposite** a tape winding surface, with at least a portion of the hub being made of plastic, and at least a portion of the **inner surface** being metal, as required by amended independent claim 26.

Finally, Applicants respectfully note that the suggestion to make the claimed combination and a reasonable expectation of success must both be found in the prior art, not in Applicant's disclosure. In re *Vaech*, 947 F.2d 488, 20 U.S.P.Q.2d 1438 (Fed. Cir. 1991); MPEP § 2143. Applicants respectfully assert that neither Weyrich nor the admitted prior art provides such suggestion to make the claimed combination and affords no reasonable expectation of success in such combination.

It is respectfully submitted that amended independent claims 1, 26, and 35 are non-obvious under 35 U.S.C. § 103, such that claims 9-10, 14, 27-29, and 31 that depend from the respective independent claims must also therefore be non-obvious. MPEP § 2143.03.

It is respectfully requested that the rejections to claims 1, 9-10, 14, 26-29, 31, and 35 under 35 U.S.C. § 103(a) over admitted art in view of Weyrich be withdrawn, and claims 1, 9-10, 14, 26-29, 31, and 35 be allowed.

**No Art Rejections**

The Office Action advanced no rejections to claims 11, 30, 38, 40, and 42-43 under the position that such rejections would require speculation as to the meaning of the terms in the claims. Claim 11 depends from amended independent claim 1; claim 30 depends from amended independent claim 26; claims 38 and 40 depend from amended independent claim 37; and claims 42-43 depends from independent claim 41. The language of these claims distinctly claim the

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subject matter of the elected Species III (FIG. 5). *See*, the Specification at page 12, lines 12-25. It is believed that the clarification stated above and at pages 8-10 of this Amendment and Response, in addition to the amendments to independent claims 1, 26, and 37, should permit examination and allowance of claims 11, 30, 38, and 40.

In addition, claims 42-43 were previously presented to particularly point out and distinctly claim the subject matter of the elected Species III (FIG. 5). It is respectfully submitted that the language of claims 42 providing a metal backbone being a metal cup shaped annular backbone defining a drive washer and a drive bore, and the language of claim 43 providing the drive washer and the drive bore are located in a plane exterior to the plastic core is illustrated in FIG. 5 and supported by the Specification at least at page 12, lines 12-25.

Applicants respectfully request examination and allowance of claims 11, 30, 38, 40, and 42-43.


**CONCLUSION**

In view of the above, Applicants respectfully submit that pending claims 1, 9-11, 14, 26-31, 35, and 37-44 recite patentable subject matter, are in form for allowance, and are not taught or suggested by the cited references. Therefore, reconsideration and withdrawal of the rejections and allowance of claims 1, 9-11, 14, 26-31, 35, and 37-44 is respectfully requested.

No fees are required under 37 C.F.R. 1.16(b)(c). However, if such fees are required, the Patent Office is hereby authorized to charge Deposit Account No. 09-0069.

The Examiner is invited to telephone the Applicant's representative at the below-listed number to facilitate prosecution of this application.

Respectfully submitted,

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